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Tucson Electric Power Company

One South Church, P.O. Box 711
Tucson, AZ 85702

April 29, 2009

Arizona Corporation Commission

DOCKETED

APR 30 2009

Docket Control
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

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Re: 2009 Annual Summer Preparedness Report
Decision No. 69680, Docket No. L-00000C-95-0084-00000

Enclosed please find Tucson Electric Power Company's ("TEP") annual summer preparedness report that documents the ability of TEP's Green Valley area 46 kV system to timely restore service to: a) all customers served from Green Valley Substation and Canoa Ranch Substation following outage of the 138 kV South to Green Valley line outage, b) applicable load of UNS Electric, Inc. ("UNS Electric") customers via the 46 kV tie from Canoa Substation to Cañez Substation for an outage of the UNS Electric 115 kV line to Nogales, and c) all TEP customers and applicable load of UNS Electric customers for the concurrent outage of the South to Green Valley 138 kV line and the UNS Electric 115 kV line to Nogales. TEP is filing this report in accordance with Decision No. 69680, Docket No. L-00000C-95-0084-00000, which modified the CEC granted in Decision No. 59221. Also enclosed is an additional copy of the filing that the Company requests you date-stamp and return in the self-addressed, stamped envelope for our files.

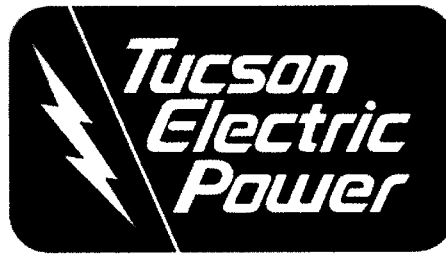
If you have any questions regarding the report, please do not hesitate to contact me at (520) 884-3680.

Sincerely,

Jessica Bryne
Regulatory Services

cc: Prem Bahl, ACC
Compliance, ACC
Shannon Kanlan, ACC

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A UniSource Energy Company

2009 Green Valley and Kantor Substation Summer Preparedness

**Prepared By:
Tucson Electric Power Company**

April 2009

EXECUTIVE SUMMARY

Transmission Planning for Unisource Energy has evaluated the ability for existing transmission and sub-transmission facilities to serve load in the community of Green Valley and load served out of the Kantor substation in Santa Cruz County. As a result of looking at contingencies involving an outage of TEP's 138 kV transmission, or Unisource Electric's (UNSE) 115 kV transmission, it has been determined that we are able to adequately serve load in the areas supplied by the Green Valley (TEP) and Kantor (UNSE) substations for the 2009 summer peak load period. Future plans in the Green Valley area are included in the TEP and UNSE 10 Year Plan filed at the ACC in January, 2009.

BACKGROUND

Green Valley

Green Valley's transmission needs are met by 138 kV and 46 kV circuits originating at TEP's South substation (exhibit A). The 138 kV circuit is a radial serving the Green Valley substation via a single 138/13.8 kV transformer (50 MVA Continuous, 60.0 MVA Emergency).

The 46 kV system is comprised of two 46 kV circuits, 46-C-550 (rated 49 MVA) and 46-C-552 (rated 49 MVA). The TEP transformers served by this transmission, and available to back-up loss of the 138 kV circuit, include:

46-C-550

- Green Valley T1 46/13.8 kV, 25.0 MVA, 30.0 MVA Emergency
- Green Valley T2 Out-of-service for re-winding until mid-summer 2009

46-C-552

- Canoa T1 46/13.8 kV, 4.7 MVA, 5.6 MVA Emergency
- Cyprus Esparanza T2 46/13.8 kV, 15.0 MVA, 18.0 MVA Emergency

The two 46 kV transformers at Green Valley (T1 & T2) are used strictly as back-up and are not loaded under normal conditions. Green Valley T2 is out-of-service for re-winding until mid-summer 2009. In this case one of TEP's mobile transformers will be moved in place for an extended outage of the 138 kV line or the 138/13.8 kV transformer at Green Valley substation.

Capacity of the existing 138 kV radial is 342.8 MVA (1434 A) which well exceeds the total 138 kV circuit loading of 49.5 MVA at the Green Valley substation.

Kantor

Kantor substation is one of four substations serving UNSE load in Santa Cruz County. This station is supplied by the 115 kV radial transmission line served from WAPA's Nogales substation. For loss of this line the load at Kantor can be picked up via an existing 46 kV tie, 46C552, served from TEP's South substation. The rating of this 46 kV circuit is 49 MVA. The transformer capacity at Kantor is 12.5 MVA. Expected load on 46C552 is 38.8 MVA including the Kantor load.

CONTINGENCY OPERATION

Green Valley

The worst contingencies regarding the Green Valley area involve loss of one or both of the 345/138 kV transformers at South substation. Neither the N-1 or the N-2 contingency causes any overloads on the remaining system. Table 1 demonstrates that there are no voltage violations greater than 5% for loss of one transformer or greater than 10% for loss of both transformers.

	South		Green Valley	
	V	delta V	V	delta V
All Lines in Service	1.025		1.012	
South-T1	1.021	0.39%	1.009	0.30%
South-T1 + T2	0.976	4.78%	0.967	4.45%

Table 1: Green Valley Area 138 kV Contingency Voltage Deviations

There is adequate capacity on the underlying 46 kV system to back up load in Green Valley for loss of the 138 kV radial transmission line in 2009. This assumes that the load at the Green Valley substation is transferred to the 46 kV system via transformation at the station including moving one of TEP's mobile transformers into place at Green Valley substation.

Kantor

For loss of the 115 kV radial in Santa Cruz County serving the Kantor 115/13.2 kV substation, the TEP 46 kV circuit 46C552 served from South substation is used to back up this load. The circuit is rated at 49 MVA and also serves Canoa, Cyprus Esparanza Wells, Cyprus Raw Water Supply and Cyprus Raw Water Booster. The remaining capacity available to back up Kantor is shown in the following table:

Substation	Continuous Rating	Emergency Rating	2009 Load
Canoa-T1	4.7	5.6	3.4
Canoa-T2 (mine)	3.1	3.7	1.7
Cyprus Esparanza Wells-T1 (mine)	3.1	3.7	0.3
Cyprus Esparanza Wells-T2	15.0	18.0	14.0
Cyprus Raw Water Booster-T1 (mine)	5.0	6.0	2.6
Cyprus Raw Water Supply-T2 (mine)	9.4	11.3	2.8
Cyprus Raw Water Supply-T3	4.7	5.6	5.5
Kantor	12.5	14.9	8.5
46C552 w/ Kantor	49.0		38.8
46C552 Margin (Rating – 2009 Load)			10.2
46C552 Margin w/ Green Valley 138 kV OOS ¹			8.7

Table 2: 46C552 kV Loading

It is clear from Table 2 above that there is adequate capacity to serve the native Canoa and Cyprus load as well as Kantor for loss of the 115 kV line even after loss of the 138 kV circuit (N-1 and N-1-1 contingencies respectively). The last row in Table 2 assumes that, for the South-Green Valley 138 kV line out-of-service, non-mine 46 kV transformers are fully loaded to back-up Green Valley and therefore the increased loading on 46C552 reduces the margin available to serve Kantor.

¹ The difference between the forecast load and the continuous rating of the transformers at Canoa T1, Esparanza Wells T2 and Raw Water Supply T3
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